

The effects of climate change on health

What consequences may climate change have on our health?

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From infectious diseases and drought to overwhelmed infrastructure, climate change may have disastrous consequences on human health and healthcare services. In this article, Professor Virginia Murray, Head of Global Disaster Risk Reduction at the UK Health Security Agency, explores some of these impacts.

Climate change presents a fundamental threat to human health and is driving a health crisis. As climatic conditions change, more frequent and intensifying weather and climate events are observed, including storms, extreme heat, floods, droughts and wildfires. These weather and climate hazards affect health, both directly and indirectly, by increasing the risk of deaths and noncommunicable diseases, and the emergence and spread of infectious diseases and health emergencies (Figure 1).

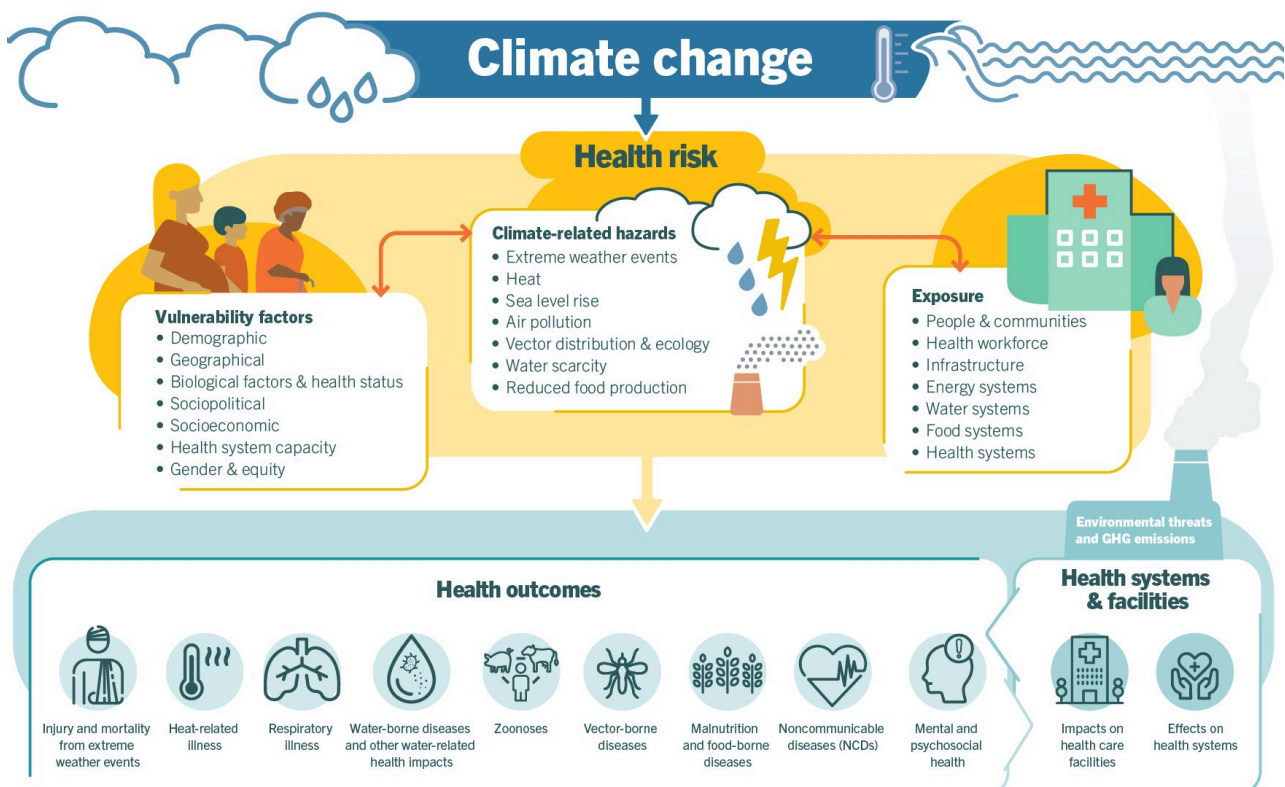


Figure 1: An overview of climate-sensitive health risks, their exposure pathways and vulnerability factors. Climate change impacts health both directly and indirectly, and is

strongly mediated by environmental, social and public health determinants. World Health Organization. Climate change. 2023. Licence: [CC BY-NC-SA 3.0 IGO](#).

A hazard to health

Climate change is an amplifier of hazards. Worryingly, climate change may undermine and potentially reverse decades of health progress. Research consistently reveals that climate change poses compounding and cascading risks to human, animal and environmental health.¹ These risks have the potential to slow advances made in population health over the last decades and disrupt functioning health systems.²

To support the leadership of the World Health Organization (WHO) and other United Nations agencies and organisations, definitions of hazards have been published following the [UNDRR/ISC Hazard Definition and Classification Review Technical Report](#)³ and [Hazard Information Profiles](#).⁴ These reports support the Sendai Framework for Disaster Risk Reduction 2015–2030, the 2030 Agenda Sustainable Development Goals and the Paris Agreement on Climate Change by providing a common set of hazard definitions that can aid in monitoring and reviewing implementation.

With human-induced climate change leading to more extreme weather conditions, the need for early warning systems is more crucial than ever. The Hazard Information Profiles may be useful to support the [UN Early Warnings for All programme](#), which is a groundbreaking initiative to ensure that everyone on Earth is protected from hazardous weather, water or climate events through life-saving early warning systems by the end of 2027.

Investigating the healthcare impact of climate change

The 10 New Insights in Climate Science report,² written for those attending COP27 in November 2022, noted that infectious diseases are likely to increase due to climate change, especially waterborne and vector-borne diseases. This is evidenced by increased childhood diarrhoeal disease being observed in some regions during extreme weather events. Increases in the spread and severity of animal and plant diseases can then affect food security and ecosystem functions. This risk has resulted in the increased use of pesticides and antimicrobials, summarised in Figure 2.

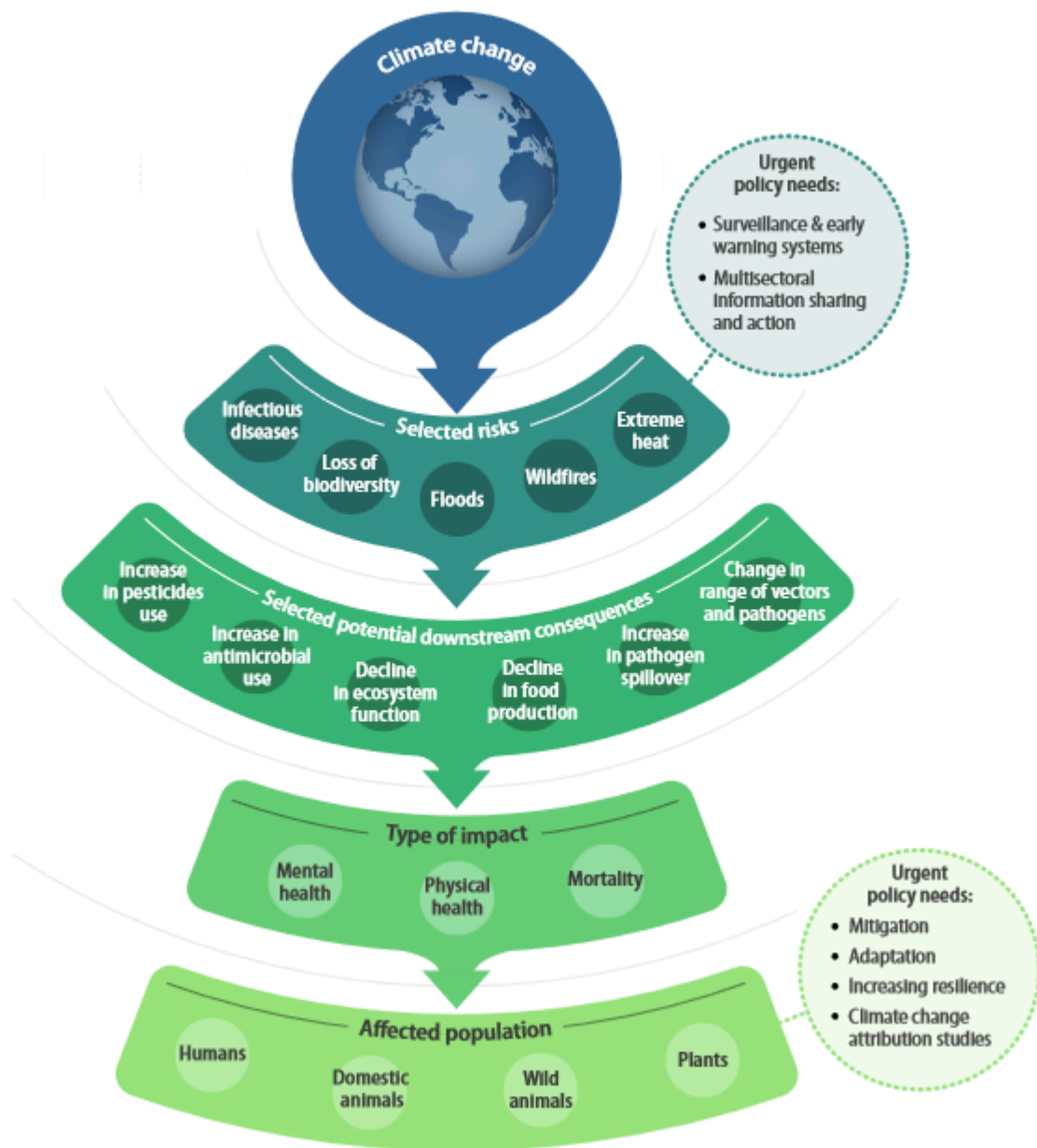


Figure 2: Urgent policy needs on selected risks and potential downstream consequences of climate change on health. Future Earth, The Earth League, World Climate Research Programme. *10 new insights in climate science 2022*.²

Another recent report from the UN Environment Programme (UNEP) noted that, in 2023, temperature records were toppled, while storms, floods, droughts and heatwaves caused devastation.⁵ Climate-related health risks are escalating rapidly worldwide. Without effective adaptation, healthcare infrastructure will continue to be overwhelmed by demand and suffer damage from climate disasters, such as heatwaves, floods and wildfires.

Effective adaptation solutions to avert, minimise and address the loss and damage to health require scaled-up efforts on all levels. UNEP recommends that governments must also address the lack of clear definitions and quantifiable data on the economic and non-economic impacts of loss and damage on health. Such an approach could combine capacity-building and risk awareness, targeted investments, combined political intent, scientific know-how and local participation, underscoring the importance of coordinated adaptation planning.⁵

The Intergovernmental Panel on Climate Change's (IPCC) Climate Change 2023 Synthesis Report summarises the state of knowledge on climate change, its widespread impacts and risks, and climate change mitigation strategies.⁶ This report stated that the observed (1900–2020) and projected (2021–2100) changes in global surface temperature (relative to 1850–1900), which are linked to changes in climate conditions and impacts, illustrate how the climate has already changed and will change in the lifespan of 3 representative generations (born in 1950, 1980 and 2020). Future projections (2021–2100) of changes in global surface temperature due to greenhouse gas emissions are shown for very low (SSP1–1.9), low (SSP1–2.6), intermediate (SSP2–4.5), high (SSP3–7.0) and very high (SSP5–8.5) (Figure 3).

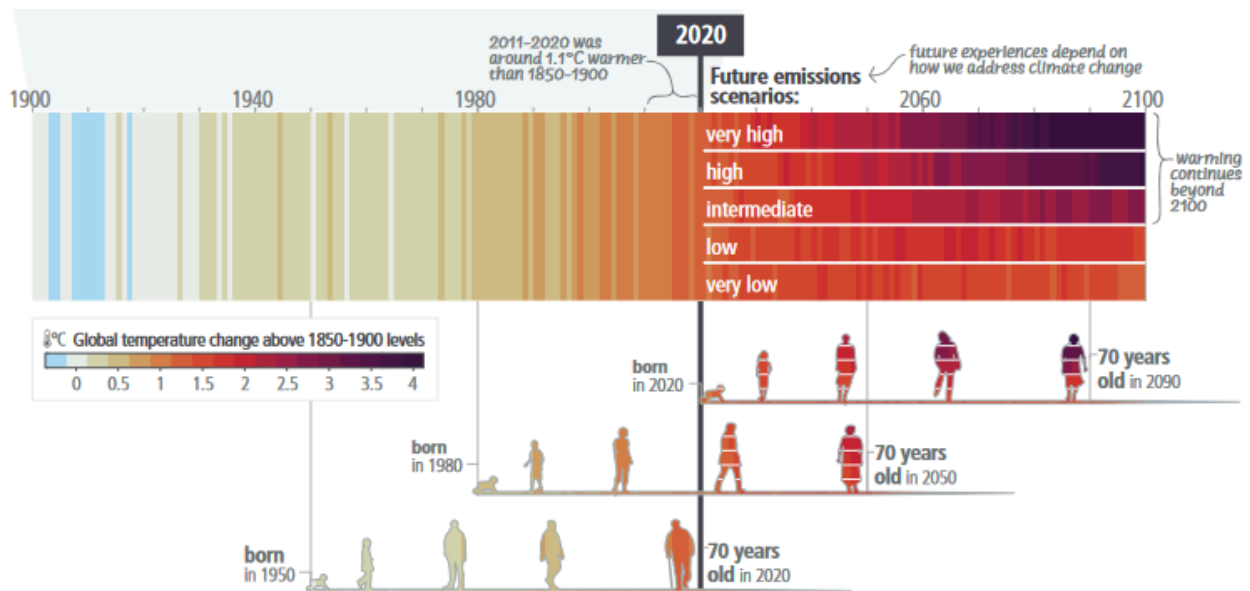


Figure 3: The extent to which current and future generations will experience a hotter and different world depends on choices now and in the near term. Intergovernmental Panel on Climate Change. *Climate change 2023 synthesis report*. 2023.⁶

Healthcare risks to the UK

In 2022, the UK Health Security Agency (UKHSA) launched its Centre for Climate and Health Security to lead climate health activity, providing a focus for partnerships and collaborations with academia, local authorities and other public sector organisations.⁷ The recently released [Health Effects of Climate Change in the UK \(HECC\) report](#),⁸ compiled by the UKHSA Centre and partners, highlights the important intersections between climate change and health.

The report sets out the most up-to-date evidence on the risks to health from climate change in the UK (Box 1).⁹

Box 1: 3 things to know about the Health Effects of Climate Change report.⁹

1. Changing climate

The weather in the UK has changed over the past few decades, becoming warmer, wetter and sunnier. This change is linked to the overall increase in global temperatures, which affects the UK's climate and leads to alterations in weather patterns.

The UK is experiencing higher temperatures, more frequent heatwaves and shifts in rainfall patterns, including heavier rain at times. Additionally, the rise in global temperatures contributes to a rise in sea levels, impacting the UK's coastlines.

As climate change progresses, negative impacts to health are expected to become worse with progressive warming.

2. Heat-related health risks

Rising temperatures, coupled with more frequent and intense heatwaves, will increase heat-related health risks. Under a high-warming scenario with no further climate adaptation, we could see as many as tens of thousands more heat-related deaths each year by the 2070s.

In the 2030s, the UK may see a 166% rise to a figure of 4,266 deaths per year, reaching a 580% increase (10,889 per year) in the 2050s and a 1,244% rise (21,544 per year) by the 2070s. Despite the warming climate, deaths from cold will remain a key risk and are also expected to go up over the next few decades, mainly because of an aging population.

3. Flooding and mental health

Climate change is making more people vulnerable to flooding, including those in areas that were not previously at risk. Flooding not only threatens lives but has further negative impacts on health, wellbeing, the economy, and the environment. Importantly, it can lead to long-term and severe effects on mental health and could also increase the risk of infectious disease outbreaks and disrupt access to health and care services.

Another 8 key takeaways can be found [here](#).

[References available on our website.](#)

Meet the author

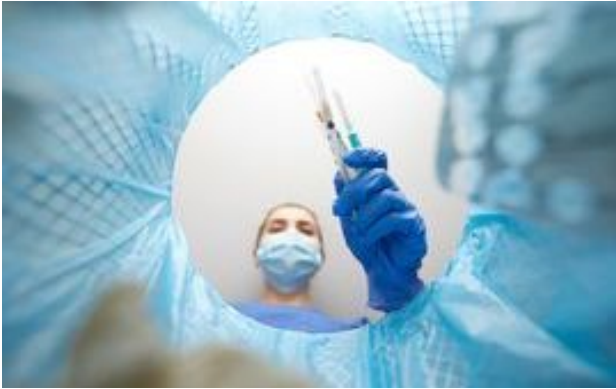


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